

ENVIRONMENTAL ASSESSMENT

of the

FINAL RULE

amending the

ATLANTIC LARGE WHALE

TAKE REDUCTION PLAN

DYNAMIC AREA MANAGEMENT

DECEMBER 2001

**National Marine Fisheries Service
National Oceanic and Atmospheric Administration
DEPARTMENT OF COMMERCE**

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1.0 INTRODUCTION

Pursuant to Section 118 of the Marine Mammal Protection Act (MMPA), the National Marine Fisheries Service (NMFS) convened the Atlantic Large Whale Take Reduction Team (ALWTRT or Team) to develop a plan for reducing the incidental by-catch of large whales in four commercial fisheries along the Atlantic coast. The Team consists of representatives from the fishing industry, the New England and Mid-Atlantic fishery management councils, state and federal resource management agencies, the scientific community, and conservation organizations. The immediate goal of the Team was to draft an Atlantic Large Whale Take Reduction Plan (Plan) to reduce the incidental take of the four primary large whale species that interact with fisheries - the North Atlantic right whale (Eubalaena glacialis), humpback whale (Megaptera novaeangliae), fin whale (Balaenoptera physalus), and minke whale (Balaenoptera acutorostrata) - to a level less than the potential biological removal level (PBR) within six months of implementation of the Team's plan.

Following the ALWTRT's initial set of meetings, the NMFS developed a proposed Plan published on July 22, 1997 (62 FR 16519), which was later modified and finalized on February 16, 1999 (64 FR 7529). Additional gear modifications were published as an interim final rule in December 2000 (65 FR 80368). The main tools of the plan include basic prohibitions on killing or injuring whales as well as a combination of broad gear modifications and time-area closures, which are being supplemented by progressive gear research, expanded disentanglement efforts, and extensive outreach efforts in key areas.

2.0 PURPOSE AND NEED

The purpose of this document is to examine the impacts to the environment that would result from the issuance of a final rule that would clarify NMFS' authority under 50 CFR 229.32(g)(2) to implement a dynamic management system, and to identify criteria and procedures NMFS proposes to implement them. The final rule would provide the framework describing the events and observations that would result in the creation of a DAM zone in which the Assistant Administrator (AA) may impose restrictions on fishing to reduce the risk to right whales. Actual restrictions would be imposed on an event-by-event basis in a separate notice delineating the DAM zone and describing the restrictions.

The need for this protective measure is also driven by the goals of the MMPA and ESA. Under the 1994 Amendments to the MMPA the goal is defined to be reduction of takes in commercial fishing operations to below PBR within 6 months of Plan implementation and to achieve zero mortality rate goal (ZMRG) within 5 years of Plan implementation. For right whales these two goals are essentially the same as PBR has been defined as zero. Since the current incidental take for right whales exceeds PBR and does not achieve ZMRG, additional risk reduction is

necessary. Under the ESA, the NMFS is obligated to ensure that actions authorized by the agency, such as fishing in federal waters, are not likely to jeopardize the continued existence of right whales. Although there is not consensus on the details of implementation, the Team, states and NMFS have all identified Dynamic Area Management (DAM) as an appropriate tool in the risk reduction strategy.

2.1 BACKGROUND

The complete background for the ALWTRP is found in Section 2.1 of the Environmental Assessment published on July 15, 1997 (NMFS 1997). The following background section is in reference to the specific actions to implement Dynamic Area Management to protect right whales sighted outside designated critical habitat areas.

The February 1999 final rule implements the regulatory tools of the ALWTRP which included a combination of broad gear modifications and time-area closures. However, the regulatory portion of the ALWTRP is supplemented by progressive gear research, expanded disentanglement efforts, extensive outreach efforts in key areas, and an expanded right whale surveillance program to supplement the new Mandatory Ship Reporting System.

The Team met on February 22-24, 2000, to determine how to adjust the current Plan to further reduce the possibility of entanglement of large whales, primarily the right whale, in lobster and gillnet gear. The Team was informed of the sense of urgency in this task given the continued entanglement of right whales in the face of clear evidence that the population is declining. There was a general understanding from available entanglement data that right whales may encounter fixed gear anywhere. Therefore, the Team looked for measures that could be broadly applied, to supplement the existing time-area closures that are being applied to right whale critical habitat. Following discussion on various alternative actions, the Team recommended that the existing requirement for fishermen to use gear modifications from the Lobster and Gillnet Gear Technology Lists be replaced with specific gear modifications. Data from the last three years of NMFS gear research demonstrated that mandatory gear modifications are cost effective, operationally acceptable to the fishermen, and have a reasonable chance of providing additional entanglement risk reduction for large whales. The Team agreed that the likelihood of right whale movements through State waters was low enough to not require additional regulations within State waters at this time. On December 21, 2000 (65 FR 80368), an interim final rule was published which incorporated the Team's recommendations. The modifications contained in the interim final rule only apply to the New England anchored gillnet and lobster trap fisheries and the Mid-Atlantic lobster trap fishery. The new requirements became effective on February 21, 2001.

The December 2000 interim final rule modifies the February 1999 final rule by changing gear requirements for the lobster and gillnet

fisheries in the Northeast segment of the ALWTRP. Components of the December 2000 IFR include the following:

- Nearshore and offshore lobster waters were redefined to be consistent with the American Lobster Fisheries Area designations (Areas 1 through 5, and the Outer Cape Management Area);
- The following new gear requirements were imposed for lobster fisheries in the Offshore Lobster Waters (Area 3 and the Area 2/3 overlap):
 - Knotless weak links at the buoy with a breaking strength of 3780 lb or less
 - Gear marking midway on the buoy line
- The following new gear requirements were imposed for lobster fisheries in the Northern Nearshore Lobster Waters (Areas 1,2, and the Outer Cape Management Area):
 - Knotless weak links at the buoy with a breaking strength of 600 lb or less
 - Multiple trap trawls only - single trap trawls were not allowed
 - Limit of one buoy line on all trawls up to and including 5 traps
 - Gear marking midway on the buoy line
- The gear technology list was eliminated for the sink gillnet fisheries in the Northeast gillnet waters (East of 72°30'W Long.). The gear requirements imposed were:
 - Knotless weak link at the buoy with a breaking strength no greater than 1,100 lb.
 - Weak link placed in the headrope (floatline) at the center of each net panel
 - Net strings that contain 20 net panels or less must be anchored with one of three optional anchoring systems
 - Gear marking midway on the buoy line
- The Lobster Gear Technology list was changed to reduce the breaking strength for the buoy weak link option to 600 lb or less and require it to be knotless.

Pursuant to Section 7 of the Endangered Species Act (ESA), the NMFS has recently reviewed the effect of fishery management activities on species listed as threatened or endangered. On June 14, 2001, the NMFS issued biological opinions (BOs) for the monkfish, spiny dogfish, and multispecies Fishery Management Plans (FMP) and Federal regulations for the lobster fishery. It was concluded that fishery management actions as proposed had the potential to jeopardize the continued existence of right whales. A reasonable and prudent alternative (RPA) was included in the BiOp, which contains a number of measures necessary to avoid jeopardy. One component of the RPA is Dynamic Area Management (DAM), the subject of this rulemaking. The RPA established a deadline for identification of the final rule for

DAM by September 30, 2001, and publication of a final rule by December 31, 2001, with the goal of having DAM in place prior to the next spring migration of right whales.

In addition to proposing a rule for establishing criteria and procedures for DAM, NMFS is concurrently drafting a proposed rule which would implement ALWTRT recommended gear modifications to the ALWTRP, as well as those modifications determined by NMFS as necessary for lobster trap gear in the offshore lobster waters, southern nearshore lobster waters and changes to the lobster and gillnet take reduction technology lists.

3.0 ALTERNATIVES

3.1 PROPOSED ACTION

The proposed action is to amend the regulations implementing the ALWTRP to clarify NMFS' authority to temporarily restrict fishing gear within defined areas to protect concentrations of North Atlantic right whales, and to establish criteria and procedures for implementing such temporary restrictions north of 40° N. latitude. These temporary restrictions may affect lobster trap and gillnet fisheries to achieve the goal of further reducing the risk of entanglement of right whales in commercial fishing gear to achieve goals and requirements of the ESA and MMPA.

A DAM zone would be triggered by a single reliable report from a qualified individual of 3 or more right whales within an area (75 nm²) such that right whale density is equal to or greater than 0.04 right whales per nm². A qualified individual is an individual ascertained by NMFS to be reasonably able, through training or experience, to identify a right whale. Such individuals include, but are not limited to, NMFS staff, U.S. Coast Guard and Navy personnel trained in whale identification, scientific research survey personnel, whale watch operators and naturalists, and mariners trained in whale species identification through disentanglement training or some other training program deemed adequate by NMFS. A reliable report is a credible right whale sighting based upon which a DAM zone would be triggered. Areas for consideration for DAM are limited to areas north of 40° N latitude, based on the fact that animals south of this area have not been observed feeding. Analyses of historical sighting data indicate that this criteria of at least 3 whales per in an area with a density equal to or greater than 0.04 right whales per nm² was the right whale density that the whales were likely to maintain residency in an area for at least 10 to 20 days. Residency indicates that whales may be actively feeding and, therefore, more vulnerable to entanglement. In addition, restrictions in an area will only be effective at reducing the risk of entanglement to right whales if they remain in that area during the restrictions. Operationally, NMFS will use the following criteria and procedures to establish a DAM zone:

1. A circle with a radius of at least 3 nm would be drawn around each individual sighting (event). This radius would be adjusted for the number of right whales seen in the sighting such that the density of 4 right whales per 100 nm² is maintained. The length of the radius is determined by taking the inverse of the 4 right whales per 100 nm² density, which is 24 nm² per whale. That figure is equivalent to a radial distance of 2.77 nm rounded up to 3 nm for a single right whale sighted (3.91 nm rounded up to 4 nm for two whales, 4.79 nm rounded up to 5 nm for three whales, etc).
2. If any circle or group of contiguous circles includes 3 or more right whales, this core area and its surrounding waters would be a candidate DAM zone.

Once a group of 3 or more right whales are identified as candidates for protection, NMFS would create a buffer zone around the initial core area to provide a larger area in which the right whales may move and still be protected. Operationally, NMFS would determine the extent of the DAM zone as follows:

1. A 15 NM radius from the event epicenter would be used to draw a larger circular zone around each core area encompassing a concentration of right whales. The event epicenter is the geographic center of all sightings on the first day of an event.
2. The DAM zone would then be defined by latitude and longitude lines drawn outside but tangential to the circular buffer zone(s).

Once a DAM zone is identified, NMFS would determine whether to impose, in the DAM zone, restrictions on fishing and/or fishing gear. This determination would be based on a review of a variety of factors, including but not limited to: the location of the DAM zone with respect to other fishery closure areas, weather conditions as they relate to the safety of human life at sea, the type and amount of gear already present in the area, and a review of recent right whale entanglement and mortality data. If NMFS determines that restrictions are necessary in the DAM zone, NMFS may require the removal of all gillnet gear and all lobster trap gear from the DAM zone within 2 days of the publication of notice in the Federal Register. NMFS may allow fishing within a DAM zone if that gear is determined to sufficiently reduce the risk of entanglement to right whales. NMFS may identify acceptable fishing practices and gear in the Federal Register notice. Gear not in compliance with the imposed restriction may not be set in the DAM zone after the effective date of the restriction. NMFS will publish a notice in the Federal Register announcing the establishment of the DAM zone with gear restrictions imposed. It will announce them immediately upon filing the notice with the Office of the Federal Register, which is generally 3 to 5 days before publication of the notice in the Federal Register.

If NMFS decides not to implement restrictions within a DAM zone, it would issue an alert to fishermen using appropriate media to inform them of the fact that right whale density in a certain area has triggered a DAM zone. In addition, NMFS would provide detailed information on the location of the DAM zone and the number of animals sighted within it. Furthermore, NMFS would request that fishermen voluntarily remove lobster trap and gillnet gear from a DAM zone and that no additional gear be set inside it.

NMFS proposes to maintain a DAM zone for a minimum of 15 days from the date NMFS issues an alert (in the case of a zone where no restrictions are imposed), or 15 days from the effective date of restrictions (in the case where restrictions are imposed). At the conclusion of a 15-day period, the DAM zone would automatically expire, unless NMFS continues the zone to further protect concentrations of right whales. Each extension would be for up to 15 days unless NMFS extends the time frame based on additional sightings.

NMFS may remove restrictions on the DAM zone or rescind an alert prior to its automatic expiration if there are survey efforts and no confirmed sightings of right whales by qualified individuals for 1 week or if other credible evidence indicates that right whales have left the designated zone. NMFS would notify the public by issuing a notice in the Federal Register and through other appropriate media.

3.2 NO ACTION

The No Action alternative would leave in place the existing regulations promulgated under the ALWTRP, but would not clarify NMFS' authority to implement DAM zones and would not identify criteria and procedures to implement them.

3.3 USE OF ALWTRT RECOMMENDED TRIGGERS AND RESTRICTED ZONES

The ALWTRT discussed DAM on numerous occasions, but members never reached consensus on the details of what concentration of right whales would trigger a DAM zone and the area of the zone. The use of a temporary DAM zone is in furtherance of the goal of reducing risk to right whales of entanglement with fishing gear. An initial trigger is desired which is indicative of a group of whales which is likely to remain in an area based on the assumption that feeding right whales are at the highest risk of entanglement compared to transiting whales. The triggers recommended by the ALWTRP would apply throughout state and federal waters in response to unexpected and unusual aggregations of right whales.

The State of Maine proposed the use of a trigger of 8 right whales in a 7.5 square nautical mile area on 2 consecutive observations. The Commonwealth of Massachusetts proposed the use of a trigger of 5 right whales in a 15 square nautical mile area based on two sightings. The State of Rhode Island proposed a trigger of 8 whales sighted in two surveys no more than 3 days apart, which will not be analyzed

separately due to the similarity to the trigger proposed by the State of Maine. There was no data provided to support these suggestions for triggers and restricted zones.

The State of Maine suggested that the size of the core area should be 7.5 square nautical miles. The core area suggested by the State of Maine only offers protection to the animals within the exact boundaries of the trigger area on the day they were observed and does not include any buffer. In addition, the Commonwealth of Massachusetts suggested a core area of 15 square miles which also does not include a buffer.

Table 1

	# of right whales	# of sightings	Size of Core Area	Density	Buffer
Maine	8	2	7.5 square nm	0.94/nm ²	0
Massachusetts	5	2	15 square nm	3/nm ²	0
NMFS (Proposed Action)	3	1	Circle w/ 3nm radius	0.04/nm ²	Circle w/ 15nm radius

3.4 USE OF TRIGGER BASED ON THE SINGLE SIGHTING OF A SINGLE RIGHT WHALE

This alternative would trigger a DAM zone using the observation of one right whale on a single day. In addition, a buffer of 15 nm would be drawn around each individual animal observed.

3.5 REMOVAL OF 50 PERCENT OF VERTICAL LINES FOR LOBSTER GEAR

This alternative would utilize the criteria for establishing a DAM zone as described in section 3.1, however, at least 50 percent of vertical lines from all lobster gear would have to be removed within 48 hours of publication of the notice in the Federal Register (rather than requiring the removal of all lobster gear).

4.0 AFFECTED ENVIRONMENT

The affected environment was discussed in detail in Section 6.0 of the Environmental Assessment published on July 15, 1997 (NMFS 1997). The physical area affected by this action is the Northeast Region of the East Coast from Maine to North Carolina, although the specific areas affected by the action are the Northeast Lobster and Gillnet waters described in Sections 3.1.1 and 3.1.2 above. The biological resources potentially affected by this action are also described in detail in of

the Environmental Assessment published on July 15, 1997 (NMFS 1997), and updates are provided in Section 5.1 below. The main goal of the ALWTRP is to reduce serious injury and mortality of large whales. The main goal of the ALWTRP is to reduce serious injury and mortality of large whales. The proposed action was developed to accomplish that goal by reducing the threat of injury to large whales from entanglement in fixed fishing gear. Therefore, the general effect of this action to large whales (the primary marine resource affected by this action) should be beneficial.

4.1 STATUS OF THE LARGE WHALES

The status of the large whales is discussed in detail in Section 2.2 of the Environmental Assessment published on July 15, 1997 (NMFS 1997). The following is provided as an update of that section.

The information in this section is from the 2000 Marine Mammal Stock Assessments (Waring et al., 2000), and from entanglement reports compiled by NMFS between 1998 and 2001. The detailed reports for entanglements up to 1998 are contained in the 2000 SAR. Summaries of the 1998, 1999, 2000, and 2001 entanglements are provided below for each species. Additional information about the population biology and human-caused sources of mortalities and serious injuries is included in the 2000 Marine Mammal Stock Assessments which are available from NMFS and on an internet web page (www.nefsc.nmfs.gov/psb/assesspdfs.htm).

4.1.1 North Atlantic Right Whale

The northern right whale is the rarest of all large cetaceans and one of the most endangered species in the world. The western North Atlantic population is estimated at 291 animals (Kraus et al., 2000) and is unlikely to be significantly higher. A recent IWC workshop on the status and trends in this population (IWC, 2000) concluded that survival has declined. Due to the decline in survival, evidenced by the decline in calving rates and increase in calving interval, the PBR level for this population has been set to zero.

Approximately one-third of all known right whale mortality is caused by human activities (Kraus, 1990). Further, the small population size and low annual reproductive rate suggest that human sources of mortality may have a greater effect on population growth rates of the right whale than on those of other whales. The principal factors retarding growth of the population are believed to be ship strikes and entanglement in fishing gear (IWC, 2000).

For the period 1994 through 1998, the total human-caused mortality and serious injury to right whales is estimated as 1.4 incidents per year. Of this figure, 0.8 incident per year is attributed to entanglements and 0.6 to ship strikes. Note that some injuries or mortalities may go undetected, particularly those that occur offshore. Therefore, the estimates above should be considered minimum estimates.

In 1998, four right whales were reported entangled. On July 12, two right whales were found trapped in a weir near Grand Manan Island, Canada and were released 2 days later without apparent harm. Another right whale was seen entangled in rope of unidentified origin on August 15 near Mingan Island in the Gulf of St. Lawrence. The whale was too active to approach safely to disentangle it, and appeared to free itself of most of the gear.

One right whale was entangled twice (and actually disentangled three times) in Cape Cod Bay. The whale had been first seen entangled in 1997 in the Bay of Fundy. On July 24, 1998, the whale was seen near Dennis, Massachusetts (Cape Cod Bay), where most, but not all of the gear it had been carrying from the 1997 entanglement was removed. NMFS has not been able to identify the type of gear responsible for this 1997 entanglement. The same whale was seen again near Provincetown, Massachusetts, on September 12 with a lobster buoy line through its mouth, and the gear was removed. The same whale was seen again 2 days later (September 14) near Barnstable, Massachusetts, where it had picked up additional lobster gear which was also removed by the NMFS-supported disentanglement team. At last report, the whale was swimming freely but still had a thin line in its mouth from the 1997 entanglement, which is now believed to represent a serious injury to that animal as it may interfere with its ability to feed.

In 1999, six right whales were reported entangled. The gear was completely removed from one animal, and most of the gear was removed from two others. Although some gear was removed from a fourth animal, it ultimately died from the entanglement. The last two animals were sighted offshore (one in the US and one in Canada) but could not be relocated.

A total of five confirmed right whale entanglements were sighted in the Gulf of Maine (both in US and Canada) in 2000. One whale was completely disentangled, one whale was not a candidate for rescue due to its minor entanglement and one whale remained entangled and required further assessment. The disentanglement team was unable to respond to two entangled right whales. One is an unidentified right whale, sighted and lost by aerial survey in the Bay of Fundy, Canada. The other was sighted by aerial survey too far offshore on two occasions. This whale has been determined to have a minor entanglement.

In 2001, two right whale entanglements have been reported thus far. One whale, identified as #1102, was first sighted in the Great South Channel on June 8. The disentanglement team assessed that the whale was in grave condition due to the serious nature of the entanglement and attached a telemetry buoy to track the movement of the whale. On June 26, the team attempted to disentangle the whale by first administering two doses of Midazolam, which the team hoped would sedate the whale and slow it down enough for the team to approach the head of the whale where the gear was lodged. However, the sedative did not produce the desired effect and the team had to further assess

the condition of the whale for future disentangling attempts. On July 14, the team made another trip out to the whale to attempt disentangling. The whale was injected with the sedative twice, but, once again, the team noticed no effect on the whale and could not attempt disentangling. On August 30, the whale was successfully sedated, however, the tail harness was not effective and therefore the disentangling was not successful. A new tag was placed on the whale for continual monitoring. Unfortunately, on September 16, the transmission from the telemetry buoy stopped and the animal is believed to have succumbed to its injuries. On July 20, 2001, an unidentified entangled right whale was spotted 30 miles east of Portsmouth, NH, which the disentangling team responded to and successfully disentangled.

Details of these events are available from the Northeast Region contact or in the Protected Resources Division of Northeast Region website (www.wh.who.edu/ro/doc/nero.html).

4.1.2 Humpback Whale

The best estimate of abundance for North Atlantic humpback whales is 10,600 (Smith et al., 1998). The minimum population estimate for this stock is 10,019 (Waring et al., in prep). Within this population, the humpback whales in the Gulf of Maine constitute a distinct, relatively small, feeding stock. However, it is not genetically distinct from other sub-populations in the western North Atlantic, which are all treated as a single stock for the purposes of the Plan and the estimation of PBR. For purposes of the current stock assessment, the maximum net productivity rate for western North Atlantic humpback whales is assumed to be 0.065 (Barlow and Clapham, 1997). The PBR level for this stock is 32.6 humpback whales per year.

For the period 1994 through 1998, the total estimated human-caused mortality and serious injury to humpback whales in U.S. waters is estimated as 3.65 per year. This is derived from three components: (1) Entanglements that have been reported by NMFS observers equate to 0.25 per year, (2) additional fishery interaction records make up another 2.4 per year, and (3) vessel collision records which account for the remaining 1.0 per year

In 1998, twelve humpback whales were reported entangled. One whale died in gillnet gear off North Carolina before the fisherman could remove the gear, and another was found dead on the beach with clear evidence of entanglement on its flukes. The gear was completely removed from four animals, and most of the gear was removed from one other. Three animals were not resighted and two were involved in minimal entanglements for which no disentangling attempt was deemed necessary.

Nine humpbacks were reported entangled in 1999. One whale was found dead on the beach with clear evidence of entanglement. Gear was completely removed from three animals and most of the gear was removed

from another whale. The Canadian disentanglement team attempted to disentangle a humpback in the Bay of Fundy but was unsuccessful. No attempt was made to disentangle two animals as they were deemed to be minimal entanglements. One entangled humpback that was found while all disentanglement teams were involved in a right whale event, could not be relocated once the teams were free.

A total of eleven confirmed reports of entangled humpback whales were received in 2000. Three were not located by responders as no one was able to stand by. Two were too far to shore for response. Two were at large and not assessed. One was at large and was assessed as a not life threatening entanglement. Two were found and, although disentanglement was not possible, the animals were later seen free of gear. One was successfully disentangled by the Network.

In 2001, to date there have been a total of seven reports of entangled humpback whales - four in the Mid-Atlantic and three in the Northeast. On February 12, a juvenile humpback was sighted entangled in gillnet gear near Cape Hatteras, NC. However, after being caught in the gear for about an hour, the whale was able to free itself. On April 8, two humpbacks were reported stranded in South Carolina, both had evidence of previous entanglements with gear. On April 9, a dead juvenile humpback was found floating in coastal gillnet gear off Virginia Beach, VA. A humpback whale was reported in Southwest Stellwagen Bank on July 25, 2001, with a minor entanglement, which the team assessed was not life threatening and, therefore, disentanglement was not attempted, but the team will continue to monitor the whale. On August 15, 2001, another entangled humpback was sighted in Southwest Stellwagen Bank, which the disentanglement team responded to and completely freed. Finally, on September 23, 2001, the disentanglement team responded to and completely freed an entangled humpback on the Southwest corner of Stellwagen Bank.

Details of these events are available from the Northeast Region contact or in the Protected Resources Division of Northeast Region website (www.wh.who.edu/ro/doc/nero.html).

4.1.3 Fin Whale

The best available estimate of abundance for the western North Atlantic fin whale is 2,200, which is considered conservative (Waring et al., in prep). The minimum population estimate is 1,803 (ibid.). For purposes of the current stock assessment, the maximum net productivity rate for fin whales is assumed to be 0.04. The PBR for this stock is 3.6.

Entanglements of fin whales are rarely documented. Because of the paucity of stranded animals or other records, NMFS has not calculated an average entanglement rate, although it believes that serious injuries or mortalities due to entanglements of fin whales occur at a rate below 10 percent of PBR. A review of 26 records of stranded or floating (dead or injured) fin whales for the period of 1992 through

1996 showed that three had formerly been entangled in fishing gear. Two of these had net or rope marks on the body, and one had line through the mouth and around the tail. Two fin whales were reported entangled in 1998; one was not resighted and the other was a floating carcass found off Digby, Nova Scotia, Canada with netting through the mouth and around the tail flukes. Three fin whales were reported entangled in 1999, all in Canada. Disentanglement attempts were made by the Canadian team on two; one was successfully disentangled, the other was not. The third animal was not resighted. There were no reports of entangled fin whales in 2000. In 2001, one fin whale has been reported with a minor entanglement which is not serious and is likely to free itself.

4.1.4 Minke Whale

Minke whales off the eastern coast of the United States are considered to be part of the Canadian east coast population, which inhabits the area from the eastern half of Davis Strait south to the Gulf of Mexico. The best estimate of the population is 3,810 (Waring *et al.*, in prep.), which is considered conservative. The minimum population estimate for Canadian east coast minke whales is 3,097 (ibid.). The current and maximum net productivity rates are not known, but the maximum rate is assumed to be 0.04. The PBR for this stock of minke whales is 31. Three minke whales were lost by the reporting vessels before Network response was made. One was successfully disentangled by the disentanglement team. In 2001, one entangled minke whale was reported off Cape Cod, which was determined to be minor.

5.0 ENVIRONMENTAL CONSEQUENCES OF THE ALTERNATIVES

The biological resources potentially affected by this action are described in detail in the environmental assessment published on July 15, 1997 (NMFS, 1997). The main goal of the ALWTRP is to reduce serious injury and mortality of large whales. The Amendments to the MMPA provide a goal of reducing take in commercial fisheries to below PBR and also of reaching a ZMRG. For right whales, this provides us with the goal of eliminating serious injury or death resulting from incidental take in commercial fisheries. Under the ESA we must also ensure that any action the agency authorizes, such as commercial fishing for lobster, monkfish, multispecies and dogfish, does not jeopardize the continued existence of right whales. This proposed action was developed to facilitate reaching those goals by reducing the threat of injury to right whales from entanglement in fixed fishing gear. Therefore, the general effect of this action to right whales (the primary marine resource affected by this action) is expected to be beneficial. Other marine mammals who are in an area determined to be a DAM zone may benefit from the imposition of restrictions during the temporary period. Other species known to be affected by fixed gear are, of course, the fish species for which the gear is targeted. The environmental affects of the gear on targeted species are contained in the environmental documents for their FMPs. Leatherback sea turtles are known to become entangled in lobster buoy

lines. However, the entanglement mechanism is similar to what happens with large whales. Therefore, the environmental consequences of each alternative to leatherback turtles will be similar to that for large whales.

Lobster trap and gillnet fishermen who operate in the areas that are determined to be DAM zones would also be affected by this action.

5.1 PROPOSED ACTION

Data from aerial surveys in 1999 and 2000 were used to retrospectively evaluate the effect of the use of the recommended triggers.

Right whale sightings from four data sets were used in a retrospective analysis to determine the frequency and size of DAM zones that would have resulted from application of the recommended triggers. The four data sets were the 1999 and 2000 Northeast Fishery Science Center (NEFSC) aerial surveys and the 1999 and 2000 NERO/Sighting Advisory System surveys. Using the local area density method, which uses equal-density circles centered on each whale sighting, local whale densities exceeded 4 whales per 100 nm² in 45 of the 54 surveys analyzed. Based on right whale sighting data from 1999 and 2000, a DAM zone would have been triggered four times in 1999 and six times in 2000. The DAM zones that would be implemented under this proposed action would require all gillnet gear and lobster trap gear to be moved for a 15 day period, which may result in a cessation of fishing for that period if fishermen do not re-set that gear in a different area.

5.1.1 Biological Impacts

DAM reduces the risk of entanglement to right whales by attempting to minimize the overlap between whales and vertical lines from fishing gear. The effectiveness of this management measure, however, depends on the resources necessary to carry out survey efforts to observe right whales and minimization of delays in achieving a reduction in vertical lines. Delays may be caused by the time between the formation of a concentration of right whales and the observation of that concentration, the time required to prepare and file a Federal Register notice implementing restrictions, and the time period allowed for compliance with the restrictions. DAM was identified in the biological opinions for the lobster, dogfish, monkfish and multispecies fisheries as a component of the strategy necessary to avoid jeopardy to right whales.

NEFSC examined data from Cape Cod Bay and Stellwagen Bank from April through October, 1980-1996 to assess whether there was any connection between the number of animals in an initial sighting and the magnitude and duration of the sighting events that followed. All initial sightings which consisted of 3 or more animals (n=13) was followed by one or more subsequent sightings within the next 10 days. This data indicated that the initial sighting of 3 or more right whales is a

reasonably good indicator of an event, and the average duration of such events is about 2 weeks. A trigger density of 4.16 (rounded to 4) right whales per 100 nm² was calculated from the 13 events described above.

In addition, NEFSC examined the available data from Cape Cod Bay and Stellwagen Bank from April through October, 1980-1996, to determine how much of a buffer would have to be drawn around the initial sightings to make sure that all whales present over the course of that event were protected by the DAM zone. Their analysis indicated that a buffer of about 15 nm placed around the sightings from the first day of an event would in most cases encompass the movements of right whales during the entire course of the event.

5.1.2 Economic Impacts

Under the Proposed Action (PA) plan, a sighting of 3 right whales at a density of 0.04 right whales per square nautical mile, will trigger a closure to all lobster trap and sink gillnet gear. Based on analysis of sightings data from 2000, Clapham and Pace (2000) predicted closures would have been induced 6 times. The economic costs of any one closure include the cost of removing gear from the area and forgone revenue for vessels that are not able to fish in an alternative area. The following analysis provides an estimate of the total cost for the 6 hypothetical closures.

Lobster Fleet

Two costs were considered in the analysis - the time to remove and store the gear in an alternative location with the associated fuel cost, plus the potential loss of revenue due to not fishing. An analysis of the economic impacts of DAM Area 1, one of the six hypothetical closures in 2000, is used here, and the details of this analysis can be found in Bisack (2001).

The analysis showed 210 lobster vessels fishing in DAM Area 1 in April and May, 2000. The total industry cost of removing the gear was estimated at \$342K and the cost per vessel ranges between \$328 and \$3,011 with an average of \$1,600 (Bisack, 2001).

The home port analysis of DAM Area 1 concluded that vessels fishing lobster trap gear would not be able to reset their lobster traps in an alternative area (Bisack, 2001). This finding was due to the observed average distance a lobster vessel travels, being less than the distance from port to outside the closure. Given the short distance the average lobster vessel travels and the size of the closure, these vessels do not appear to have sufficient range to fish elsewhere and would therefore incur a loss of revenue for the duration of the closure. Note that these revenues are not likely to be recoverable later in the year due to effort controls in the lobster fishery. Total industry foregone revenues when vessels do not fish in an alternative area are \$974K with an average of \$4,600 per vessel.

In summary of DAM Area 1, the total estimated loss to the industry would be \$1.3 million if all lobster fishing ceased during the restricted period (April 1 - May 31). On average, the cost per vessel would be \$6,200 (\$1,600 + \$4,600) for forgone revenues associated with the cost of removing gear and not fishing. Based on 2000 state landings data from Massachusetts, the average vessel fishing lobster gear in this area fishes 9 months of the year (CV=0.26), lands 22,400 pounds of lobster (CV=0.85) on 99 trips (CV=0.46) with an annual revenue of \$89,600 (CV=0.85). Given DAM Area 1 is closed, the average vessel would have their annual revenue reduced by 7% ($=\$6,200/\$89,600$).

To determine the economic losses of closing the other five areas in 2000, costs from DAM Area 1 were extrapolated to the other areas. Specifically, a cost per square nautical mile day was estimated for DAM Area 1 (\$4.82 per nm² per day), and multiplied by the time and area of the other closures. This approach assumes fishing effort is uniformly distributed across DAM Area 1, and it is representative of fishing effort in other areas. If the density of fishing effort in DAM Area 1 is greater than the density of fishing effort in other areas, then the economic impacts presented here may be upwardly biased. Also if lobster trap fishermen in areas 4,5,6,7 and 8 were able to reset their gear then the costs would be reduced. In contrast, if the density of fishing effort in DAM Area 1 is less than the density of fishing effort in other areas, then the economic impacts of the other areas presented here may be downwardly biased.

The total cost of closing six areas in 2000 under the PA plan would have been \$3.2M to the lobster industry (Table 2). DAM Area 1 is the largest and longest closure with a total cost of \$1.3M.

Results from DAM Area 1 were extrapolated to other DAM areas. This extrapolation approach results in an industry level estimate for the other 5 DAM areas. Using this method, individual vessel information is lost (ie. can't be transferred) and is not recoverable. Therefore, annual revenue reductions as a result of DAM closures are only presented for Area 1.

Table 2 Total square nautical miles (nm²), number of days the area is closed and the total cost of the closure to vessels fishing lobster gear, by area.

DAM ¹	nm ²	Days	Total Cost (\$1)
Area 1	4500	60	1,302,000
Area 4	2972	56	802,615
Area 5	2523	29	352,760
Area 6	2198	17	180,200
Area 7	3272	13	205,143
Area 8	3744	18	324,979
Total			3,167,698

Gillnet Fleet

A home port analysis of DAM Area 1 concluded that 80 percent of the vessels fishing sink gillnet gear would not be able to reset their gear in an alternative area (Bisack, 2001). This finding was due to the observed average distance a sink gillnet vessel travels being less than the distance from their respective ports to outside the DAM Area 1 closure. In addition, several groundfish and marine mammal closures currently in place were also a limiting factor to finding accessible open areas to fish sink gillnet gear.

The economic analysis of DAM Area 1 determined 42 gillnet vessels were fishing in DAM Area 1 between April 1 and May 31, 2000, according to the Vessel Trip Reporting (VTR) data. These vessels will incur the cost of removing their gear and a loss of revenue due to not fishing. The total industry cost to remove sink gillnet gear is \$7,081, with a cost per vessel of \$170. For 20 percent of the vessels that can fish in an alternative area, the difference in revenues between an alternative area and DAM Area 1 are assumed zero. Average revenues per vessel fishing in DAM Area 1 were \$4,150 in April and \$21,900 in May with an average of \$26,220 for both months. Total forgone industry revenues are \$785K for April and May. Closing DAM Area 1 cost a sink gillnet vessel on average \$26,390 for removing gear and forgone revenues from not fishing. Based on recorded fishing activity in the 2000 NEFSC Vessel Trip Reporting database, the average vessel fishing sink gillnet gear in this area fishes 7.3 months of the year (CV=0.36), on 65 trips (CV=0.50) with an annual revenue of \$106,600 (CV=0.72). Given DAM Area 1 is closed, the average vessel would have their annual revenue reduced by 20% (=\$26,390/\$106,600).

To determine the economic losses of closing the other five areas in 2000, costs from DAM Area 1 were extrapolated to the other areas. Specifically, a cost per square nautical mile day was estimated for DAM Area 1 (\$4.08 per nm² per day), and multiplied by the time and area of the other closures. This approach assumes fishing effort is uniformly distributed across DAM Area 1, it is representative of fishing effort in other areas, and the cost is linear. A more

conservative estimate is presented here by assuming 100 percent of the gillnet vessels can not fish in an alternative area.

The total cost of closing six areas in 2000 under the PA plan is \$2.7M to the sink gillnet industry (Table 3). DAM Area 1 is the largest and longest closure with a total cost of \$1.1M.

Results from DAM Area 1 were extrapolated to other DAM areas. This extrapolation approach results in an industry level estimate for the other 5 DAM areas. Using this method, individual vessel information is lost (ie. can't be transferred) and is not recoverable. Therefore, annual revenue reductions as a result of DAM closures are only presented for Area 1.

Table 3 Total square nautical miles (nm²), number of days the area is closed and the total cost of the closure to vessels fishing sink gillnet gear, by area.

DAM	nm ²	Days	Total Cost (\$1)
Area 1	4500	60	1,101,240
Area 4	2972	56	678,857
Area 5	2523	29	298,367
Area 6	2198	17	152,415
Area 7	3272	13	173,511
Area 8	3744	18	274,870
Total			2,679,260

5.1.3 Social Impacts

Using the 2000 data to conduct a retrospective analysis, it appears that application of DAM in 2000 would have affected approximately 210 lobster vessels and 42 gillnet vessels in 6 areas that were affected for a total of 193 days. This analysis assumed that fishing effort in DAM Area 1 is uniformly distributed and is representative of fishing effort in the other 5 DAM areas. It is also important to note that these closures may be in addition to other closures and restrictions imposed under the Magnuson-Stevens Act. Prohibiting fishing in these area may result in reduced employment if the result is that the vessels do not fish on the days that implementation of DAM has closed an area. Alternatively, a DAM closure in one area may shift fishing effort outside that area into adjacent areas. This effort shift may require more time away from family, friends and community as fishermen may need to travel further to reach fishing grounds not restricted. However, effort may be shifted inshore, perhaps closer to family, friends and community.

Social benefits may be realized if these DAM closures are effective at reducing the risk of entanglement to right whales, other marine mammals and sea turtles. If this reduced risk increases the potential

for recovery, then society will benefit by preventing a loss of a species and preserving biodiversity. While these DAM closures place time and area restrictions on fishing practices, they do not prohibit fishing all together. Social benefits are realized from the application of management practices that demonstrate that fishing practices and marine mammals can co-exist.

5.2 NO ACTION

The No Action alternative would leave in place the existing regulations promulgated under the ALWTRP, but would not clarify NMFS' authority to implement DAM zones and would not identify criteria and procedures to implement them. The existing regulations state that the AA may revise the regulations through notice in the Federal Register in order to close areas, open areas, and change boundaries of a closed are or for a similar purpose (§ 229.32(g)(2)). So, even in the absence of this rule, it appears that NMFS would have the authority to implement DAM. However, if the No Action alternative is adopted, then the regulations would lack defined criteria and procedures for implementing DAM zones.

5.2.1 Biological Impacts

Without specifying the triggers and implementation details of when and how the AA proposes to use his existing authority under § 229.32(g)(2), it is difficult to evaluate whether DAM will provide sufficient protection for right whales. In the BOs completed on the lobster, monkfish, multispecies and spiny dogfish fisheries, it was concluded that additional protections were needed to avoid jeopardy to right whales. DAM, a mechanism to reduce the risk of entanglement for concentrations of right whales, was identified as an integral component of the strategy to avoid jeopardy. The ESA requires the use of the best available scientific data. We believe the best available scientific data is that used by the NEFSC in their analysis identifying triggers and buffers. Implementation of another mechanism without scientific support would not appear to be consistent with the ESA. The success of DAM depends to a great extent on whether NMFS is able to develop reasonable, effective criteria and procedures, educate the regulated community of those criteria and procedures, and achieve compliance with any restrictions that are implemented. Completion of rulemaking to develop criteria and procedures for implementing DAM would have positive biological consequences for right whales if public participation results in the establishment of more appropriate criteria and procedures for DAM zones and greater compliance by fishermen with DAM restrictions. Conversely, adopting the No Action alternative could be viewed as foregoing an opportunity to improve protection of right whales by avoiding the opportunity to benefit from public participation in the decision-making process and from possible increased compliance with DAM restrictions.

5.2.2 Economic Impacts

Effectiveness of the RPA in avoiding jeopardy is of obvious benefit to the right whale, but is also of benefit to the fisheries. If the RPA is not successful at avoiding jeopardy, then additional, more stringent measures would have to be adopted which would be likely to have greater economic impacts on the commercial fishing industry, including the potential cessation of fishing. It is difficult to quantify the economic impacts of NMFS using its discretion in implementing § 229.32(g)(2) as the trigger to be used, restricted zone and restrictions to be implemented are all unknown at this time in addition to the unknowns of the particular event such as the time and location of the restriction and the level of fishing effort at that time and location.

5.2.3 Social Impacts

Under the No-Action alternative fishing practices are not further restricted and therefore, at least in the short term, impacts to employment, family and community are minimized. If, however, the failure to take action now to minimize impacts on right whales results in the need to take more aggressive action at a later date, the consequences to employment, family and community would be greatly increased from that seen under the preferred action alternative.

If the failure to take action results in an increased risk of extinction to the North Atlantic right whale, then there are social impacts associated with such failure. The extinction of the right whale would be a loss to society, which has placed a value on the protection of all species for their intrinsic value as well as for their contribution to biodiversity. By failing to take action, the Secretary of Commerce would not be carrying out responsibilities imposed on him by the statutes under the Endangered Species Act, which require him to ensure that all actions he authorizes, such as commercial fishing, are not likely to jeopardize the continued existence of threatened and endangered species.

5.3 USE OF ALWTRT RECOMMENDED TRIGGERS AND RESTRICTED ZONES

The creation of a DAM zone could be triggered by the observation of a different number of animals in a different area. The State of Maine proposed the use of a trigger of 8 right whales in a 7.5 square nautical mile area on two consecutive observations that would result in a core area of 7.5 square nautical miles. The Commonwealth of Massachusetts proposed the use of a trigger of 5 right whales in a 15 square nautical mile area based on two sightings. The State of Rhode Island proposed the use of a trigger of 8 whales, which will not be analyzed separately due to the similarity to the trigger proposed by the State of Maine. None of the proposals offered by the states were supported by data. No information has been presented to demonstrate the potential for these triggers to result in DAM zones that would reduce the risk of entanglement to right whales. The ALWTRT discussed

having different triggers within each respective state jurisdiction. This could only be considered if the state trigger was found to be more restrictive than the federal trigger, which is not the case with the triggers suggested by Maine, Massachusetts and/or Rhode Island. The state triggers were evaluated here as if they would apply consistently to all waters - federal and state. An alternative that does not achieve the mandates of the ESA and MMPA is not an acceptable one.

5.3.1 Biological Impacts

The goal of a DAM is to implement a management action that reduces the risk of entanglement to an observed concentration of right whales. The desire is to have the management measures in place to protect the group of right whales while they remain resident in an area during feeding. The size of the DAM zone should be sufficient to protect the concentration of animals while they remain grouped together.

The State of Maine proposed the use of a trigger of 8 right whales in a 7.5 square nautical mile area on two consecutive observations that would result in a core area of 7.5 square nautical miles. The Commonwealth of Massachusetts proposed the use of a trigger of 5 right whales in a 15 square nautical mile area based on two sightings. Concentrations of right whales required to reach these triggers is much higher than for the trigger in the proposed action ($.94/\text{nm}^2$ for ME and $3/\text{nm}^2$ for MA compared to $.04/\text{nm}^2$ for the preferred alternative). The triggers suggested by Massachusetts and Maine were applied to right whale sightings from four data sets in a retrospective analysis to determine the frequency and size of DAM zones. The four data sets were the 1999 and 2000 NEFSC aerial surveys and the 1999 and 2000 NERO/Sighting Advisory System surveys. The results of the retrospective analysis are presented in the table 4.

Table 4

TRIGGER	YEAR	NUMBER OF TIMES TRIGGER WAS OBSERVED	CANDIDATES FOR DAM ZONES
3 right whales / 0.04 NM ²	1999	38	4
	2000	42	6
8 right whales / 7.5 NM ²	1999	1	0
	2000	0	0
5 right whales / 15 NM ²	1999	3	0
	2000	2	1

NOTE: This is based on a single observation, although the states have proposed that the trigger needs to be verified by a second survey. Also, note that the number of candidates for DAM zones is estimated after considering existing restricted areas (i.e. Cape Cod Bay and Great South Channel)

Application of the trigger suggested by the State of Maine to the 1999 and 2000 aerial survey data resulted in no DAM zones. If no DAM zones are created then the application of DAM with the Maine trigger would result in no increase in protection for right whales. This trigger does not meet the goals under the MMPA and ESA. Application of the trigger suggested by the State of Massachusetts to the 1999 and 2000 survey data resulted in only one DAM zone. Based on this analysis, it does not appear that the trigger suggested by the State of Massachusetts would result in a significant increase in protection to right whales and therefore would not meet the objectives of the MMPA and ESA.

The State of Maine suggested that the size of the DAM zone should be 7.5 square nautical miles. The DAM zone suggested by the State of Maine only offered protection to the animals within the exact boundaries of the trigger area on the day they were observed and does not include any buffer. In addition, the Commonwealth of Massachusetts suggested a DAM zone of 15 square miles and does not include a buffer. The proposed buffer of 15 nautical miles was selected because it was the area that encompasses the movements of right whales during the entire course of the feeding event. Therefore, without adequate buffers surrounding the DAM zones suggested by Maine and Massachusetts, the movements of foraging concentrations of right whales will not be adequately protected. Moreover, the states' proposed DAM zones lack scientific justification

supporting their determinations that a 7.5 or 15 square nautical mile area, without surrounding buffers, will sufficiently protect right whales.

In order for the DAM zone to be effective, it must be of sufficient size to encompass the right whales during the restricted time period. The effectiveness of DAM depends on both the ability of the restrictions imposed to reduce the risk of entanglement to right whales as well as the presence of right whales within the DAM zone to benefit from the restrictions in place. The available data supports the creation of a buffer of 15 nautical miles.

5.3.2 Economic Impacts

Under the non-preferred alternative 1 (NPA 1) plan, the state of Maine and Massachusetts suggested alternative triggers and a different DAM zone from those defined under the PA plan. Specifically, Maine suggested a closure be triggered by a sighting of 8 right whales and the closure should have a total area of 7.5 square nautical miles. Under Maine's proposal there would have been no closures based on sightings data from 2000. Alternatively, Massachusetts suggested that a closure should be triggered by a sighting of 5 right whales, and the closure should have an area of 15 squared nautical miles. Under Massachusetts' proposal, there would have been one closure based on sightings data from 2000. In the event of a closure, vessels will incur costs due to: 1) the cost of removing their gear from the area; and 2) revenue losses if they are not able to fish in an alternative area.

As in the PA plan, a cost per square nautical mile day from DAM Area 1 in 2000 was used here to extrapolate the cost of removing gear and revenue losses for this one closure. This approach of using a cost per square nautical mile from DAM Area 1 assumes that fishing effort is uniformly distributed across DAM Area 1, it is representative of fishing effort in other areas, and the cost is linear.

Lobster Fleet

The total cost of closing this one area in 2000 to the lobster fleet would have been \$16.3K based on the Massachusetts proposal.

Gillnet Fleet

Total industry costs to the sink gillnet fleet for closing one area in 2000 would have been \$13.7K based on Massachusetts proposal of using a trigger of 5 right whales.

5.3.3 Social Impacts

Because the triggers and DAM zones suggested by the States of Maine, Massachusetts and Rhode Island result in the creation of only a single DAM zone, their adoption does not have significant effects within the fishing community on employment and other aspects of life. The one DAM zone created would have affected 210 lobster vessels and 42

gillnet vessels for a total of 15 days. During that 15 day closure, those vessels could be either not fishing at all or fishing in another location. This may result in short term unemployment or have some impact on family and community if, during those 15 days, fishing vessels have to travel further from home to access open fishing grounds. However, effort may be shifted inshore, perhaps closer to family, friends and community.

Because the application of these triggers results in only one DAM zone, they do not appear to offer significant protection to right whales. Without that additional protection, the risk that right whales will go extinct is increased. With the passage of the Endangered Species Act, Congress has indicated that it wishes to prevent the extinction of species. This alternative would have negative social impacts if it jeopardizes the achievement of that goal.

5.4 USE OF TRIGGER BASED ON THE SINGLE SIGHTING OF A SINGLE RIGHT WHALE

This alternative would trigger a DAM zone using the observation of one right whale on a single day. In addition, a buffer of 15 nm would be drawn around each individual animal observed.

5.4.1 Biological Impacts

From the data set examined from Cape Cod Bay and Stellwagen Bank from April through October, 1980-1996, there were 50 initial sightings in which the number of right whales involved was either one or two. For forty-one percent of these sightings, right whales were not seen in that area again in the next 10 days. In contrast, right whales were sighted at least once within the next 10 days following all initial sightings involving three or more right whales. In addition, the observation of one or two right whales does not appear to be a good indicator of residency, which is being used as an indicator of feeding. If the desire is to protect feeding right whales, which are assumed to be at greater risk of entanglement, then the trigger needs to be effective at predicting residency.

The 1999 and 2000 aerial survey data was examined to determine how many animals sighted that did not meet the density of 4 right whales per 100 NM² ended up being protected by a DAM zone created by the trigger being met by another group of animals. Based on an analysis of the 2000 sighting data, 17 right whales were not protected by the 6 closures under the PA plan. Based on this analysis, it does not appear that the use of a trigger less than density of 4 right whales per 100 NM² would result in a significant increase in protection to right whales. It is also worth considering the increased administrative burden that would be incurred under this approach where a DAM zone would be created around each individual animal observed.

5.4.2 Economic Impacts

Under the non-preferred alternative 2 (NPA 2) plan, 1 right whale sighting with a density of 0.01 right whales per squared nautical mile would trigger a closure. Analysis of 2000 sightings data indicate 17 right whales would not be protected by the six closures under the PA plan. The total cost of NPA 2 will include the cost of the PA, plus the cost of 17 additional closures with a 15 square nautical mile buffer zone. The logic here assumes the cost of the PA plan would be equivalent to the cost of drawing a 15 square nautical mile box around all other sightings of 1 or more right whales, which are independent of the 17 not protected under the PA plan.

As in the PA plan above, the cost per square nautical mile day from DAM Area 1 in 2000 was used here to extrapolate the cost of removing the gear and revenue losses for these additional 17 closures. This approach assumes fishing effort is uniformly distributed across DAM Area 1, it is representative of fishing effort in other areas, and the cost is linear. We assume vessels will not fish in an alternative area.

Lobster Fleet

Total industry costs of the lobster fleet for the NPA 2 plan are \$3.5M. This includes \$0.3M for the 17 right whales not protected under the PA plan, plus \$3.2M for the PA plan.

Gillnet Fleet

Total industry costs of the sink gillnet fleet for the NPA 2 plan are \$2.9M. This includes \$0.23M for the 17 right whales not protected under the PA plan, plus \$2.68M for the PA plan.

5.4.3 Social Impacts

The social impacts of this alternative are similar but slightly higher than those associated with the PA. The triggering of 17 more DAM events results in 255 more days of fishing restrictions for a total of 448 fishing days of restrictions. The size of each individual restricted area created by the observation of a single animal in these 17 additional events is significantly smaller than that for the other 6 DAM areas created under both the PA and this alternative (225 nm² compared to 2198 to 4500 nm² for DAM Areas 1,4-8). During these 23 DAM events, fishing will be affected. This could result in unemployment if the vessels are not able to relocate to other areas or could negatively impact the fishing community by requiring more time away from family, friends and community in order to reach unrestricted fishing grounds. However, effort may be shifted inshore, perhaps closer to family, friends and community.

This alternative does result in the creation of 23 DAM zones which would reduce the overlap between right whale concentrations and fishing gear and would therefore be likely to reduce the potential for entanglement that could result in serious injury or death. This would reduce the potential for extinction of right whales which would have a

positive social benefit in the preservation of a species and of overall biodiversity.

5.5 REMOVAL OF 50 PERCENT OF VERTICAL LINES FOR LOBSTER GEAR

Under this alternative, the trigger and buffer would be the same as in the preferred alternative (i.e., the observation of 4 right whales in a 100 nm² area and the buffer would be 15 nm), however, instead of imposing a restriction requiring removal of all lobster gear, a 50 percent reduction in vertical lines would be required for lobster gear. The restrictions for gillnet gear would be the same as in the preferred alternative which requires complete removal.

5.5.1 Biological Impacts

This alternative allows lobster fishermen to keep 50 percent of vertical lines in the water, so it presents a greater entanglement risk to large whales, particularly right whales, than the proposed action. Furthermore, requiring fishermen to reduce by 50 percent the number of vertical lines from lobster gear is difficult for the agency to enforce. This could result in less compliance which diminishes the value of the restriction. If compliance with such a requirement is not obtained because of enforcement difficulties, then the entanglement risk of this alternative would be even higher than otherwise expected.

5.5.2 Economic Impacts

Under the non-preferred alternative 3 (NPA 3) plan, a closure would be triggered by a sighting of 3 right whales as defined in the PA plan above. Based on right whale sightings data in 2000, six areas could potentially be closed (Clapham and Pace, 2000). However, instead of removing all the lobster gear as in the PA plan, only 1 buoy line would be removed from each lobster trawl to reduce the vertical lines in the closure by 50 percent. For the purposes of this economic analysis, we assume vessels will remove the buoy line within normal fishing operations and the cost incurred is due to the extra labor required.

Sink gillnet vessels under this plan however, must remove all their gear from the closed area. In the event of a closure, estimated here are the associated cost of: 1) removing sink gillnet gear from the area, and 2) revenue losses if they are not able to fish in an alternative area. Lobster vessels, on the other hand, must reduce by 50 percent the number of vertical lines in the water column. The economic impact of closing six areas in 2000 are estimated here.

Lobster Fleet

An economic analysis of DAM Area 1 in 2000 indicated the industry cost of removing 1 buoy line from each lobster trawl within normal operations was \$49K. The cost per vessel ranges between a low of \$21 and a high of \$239.

Using the DAM Area 1 home port analysis in 2000, a cost per square nautical mile to remove one buoy line was estimated and used to extrapolate the cost to the other five areas. This approach assumes fishing effort is uniformly distributed across DAM Area 1, it is representative of fishing effort in other areas, and the cost is linear.

Total industry cost to remove 1 buoy line from six potential closures in 2000 is \$0.2M (Table 5). Area costs range from a high of \$49.7K in DAM Area 1 to \$24.3K in DAM Area 6. Based on the home port analysis of DAM Area 1, the average cost to remove one buoy line is \$237 per vessel.

Table 5 Total cost in 2000 of removing 1 buoy line from each lobster trawl by area

Area	NM ²	Total Cost (\$1)
Area 1	4500	49,700
Area 4	2972	32,826
Area 5	2523	27,860
Area 6	2198	24,277
Area 7	3272	36,142
Area 8	3744	41,350
Total	19209	212,155

Gillnet Fleet

The economic impacts of the NPA 3 plan for sink gillnet vessels is the same as in the PA plan (see section 5.1.2).

5.5.3 Social Impacts

The social impacts of this alternative compared to the PA remain unchanged for the gillnet industry but are potentially reduced for the lobster industry. The days the lobster industry would be affected are the same, however the fishery is allowed to continue with a gear modification. In order to comply with that gear modification, fishermen would have to tend their gear and remove one buoy line. Compared to the PA, this would have fewer social impacts as the fishing practices would continue in essentially the same fashion allowing employment to remain unchanged and removing the need to travel to other unrestricted areas.

To the extent that the requirement to reduce vertical lines by 50% is either not adhered to or is not effective at reducing entanglements, the social costs could be an increased risk of extinction of right whales. This would have negative social impacts as it would not achieve society's objectives as embodied in the ESA to prevent extinction of threatened and endangered species.

6.0 POTENTIAL CUMULATIVE EFFECTS

This section estimates the cumulative effects of several preferred alternative plans that would be implemented with the intention of protecting right whales. Two types of plans exist. First, gear modifications have been required under 3 PA plans (NMFS 1997; NMFS 2000; 2001). One gear modification requires a weak link to be attached at the top of the buoy line, where the weak link has a designated breaking strength. The objective is to allow a right whale to break through a lobster or sink gillnet buoy line if there is an encounter, and, therefore, prevent an entanglement. Unfortunately, with the gear modifications under all these PA plans, the risk of entanglement may not be completely removed.

Dynamic Area Management (DAM) would be implemented in 2001 as a second type of plan, and is analyzed here. Specifically, a sighting of 3 right whales at a density of 0.04 right whales per square nautical mile, would trigger a closure to all lobster and sink gillnet gear under this 2001 PA plan. Removal of all gear would reduce the risk of an entanglement with lobster and sink gillnet gear. The objective of gear modifications when DAM is operational, is that the gear modifications in the PA plans (1997, 2000, 2001) will reduce the risk of entanglement in cases where DAM is not active or right whales are outside of existing closures (such as Cape Cod Bay Critical Habitat and the Great South Channel Critical Habitat).

Decreasing the risk of right whale entanglements under these four PA plans has an increasing cumulative cost to the lobster and sink gillnet fleets. The total lower bound industry costs to the lobster and sink gillnet fleets for the gear modifications under the 1997, 2000 and 2001 PA plans are \$129.3K, \$300K, and \$948K, respectively (Table 6). A substantial increase in cost for gear modifications exists in the 2001 PA plan compared to earlier plans, as a result of the northern inshore lobster fishery requiring gear modifications for the first time, which consists of 5,982 vessels potentially fishing lobster gear. Similarly, the total upper bound industry costs are \$276.3K, \$648K, and \$0.4M for gear modifications under the 1997, 2000, and 2001 PA plan. The cost of the 2001 DAM PA plan is \$5,847K.

The total lower and upper bound cumulative industry costs to the lobster fishery for these four PA plans are \$4.3M and \$7.9M, respectively. Similarly, the total cost to the sink gillnet fleet is \$2.9M. Finally the total lower and upper bound cumulative cost to the lobster and sink gillnet fishery for all four PA plans is \$7.2M and \$10.8M, respectively.

Table 6 Total lower and upper bound industry costs of gear modifications under the 1997, 2000 and 2001 PA plan, and the cost of DAM under the 2001 PA plan incurred to the lobster and sink gillnet fleet.

Fleets		Cost of PA Plans (in \$1,000s)				
		Gear EA			DAM EA	Cumulative
		1997	2000	2001	2001	Total
Lobster	LB	129.0	191	849	3,168	4,337
	UB	276.0	539	3,915	3,168	7,898
Gillnet	Pt	0.3	109	99	2,679	2,887
Total	LB	129.3	300	948	5,847	7,224
	UB	276.3	648	4,014	5,847	10,785

7.0 FINDING OF NO SIGNIFICANT IMPACT

Impacts to society, both beneficial and adverse, were evaluated in this document and were determined to be not significant for the purpose of E.O. 12866. Implementation of DAM, as described in this document, is expected to have short-term, site-specific negative impacts on the fishing industry by preventing fishing during DAM events or by requiring fishermen to move to alternative unrestricted fishing grounds. DAM is also expected to have positive effects on right whales by reducing the risk of entanglement. The impact of DAM alone, however, is not significant enough to avoid the likelihood of jeopardy.

Public health and safety is not expected to be significantly affected by implementation of DAM. Prohibiting fishing from DAM zones could result in fishermen being dislocated to unrestricted areas in order to resume fishing. Access to these unrestricted areas may require traveling further from home ports, which may expose fishermen to greater risk. Alternatively, fishing effort may become relocated closer to shore, which may present less risk. There is no evidence, however, that closure of the DAM areas will result in significant impacts to public health and/or safety.

The exact location of a DAM zone cannot be predicted in advance because the area is created in response to the unusual and unexpected observation of a concentration of right whales that meets the DAM trigger. These areas are candidates for restrictions due to the presence of right whales. While these areas are valuable in spatial and temporal characteristics offering benefits for right whale protection and recovery, these geographic areas do not have unique characteristics. There is no evidence that DAM zones would have unique geographic characteristics.

The effects on the human environment from DAM are not likely to be highly controversial. The impact of an individual DAM zone may be controversial to a small segment of the fishing community, but the overall effects on the human environment are not expected to be highly controversial. These DAM events are limited in geographic area and in time which automatically restricts the scope of the effects on the human environment.

It is impossible to identify the exact individuals likely to be affected by this final rule because the time and area of DAM zones cannot be predicted in advance. The analysis in this EA uses previous sighting data to predict the number and location of DAM zones. This analysis provides sufficient information and insight into the potential effects associated with the implementation of DAM in future years. While the exact location and frequency of future DAM zones cannot be predicted, sufficient information exists which indicates that the effects cannot be characterized as highly uncertain. The implementation of fishery restrictions based on the delineation of a DAM zone is not expected to result in any unique or unknown risks. Restrictions on fishing areas or gear types are not unusual and are already implemented in order to meet objectives of the Magnuson-Stevens Act, MMPA and ESA.

There is no evidence that implementation of DAM as a management tool to reduce the risk of entanglement to right whales establishes a precedent for future actions with significant effects or represents a decision in principle about a future consideration. The justification for DAM can be found in the Biological Opinions drafted for the multispecies, monkfish, spiny dogfish and lobster fisheries. The use of DAM as a management tool has been determined to be important in order for the agency to meet objectives under the MMPA and ESA. It is an independent action being implemented to achieve a specific objective and is therefore not expected to establish a precedent for future actions.

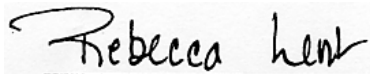
Section 6.0 of the EA examines the cumulative effects of this final rule and another proposed rule which would implement additional gear modifications also designed to reduce the risk posed to right whales from gillnet and lobster trap gear. Based on the information presented, it does not appear that these two actions, occurring nearly simultaneously, and which have independently been determined to individually have insignificant impacts on society, will result in cumulatively significant impacts.

There is no evidence that the implementation of DAM will adversely affect entities listed in or eligible for listing in the National Register of Historic Places or will cause loss or destruction of significant scientific, cultural, or historic resources. The result of DAM will be temporary site specific restrictions on fishing practices. Compliance with these restrictions is, by definition, not likely to result in the permanent loss or destruction of resources.

The basis for this proposed action is to offer additional protection to the critically endangered right whale. It is expected that other protected marine mammals, to the extent their distribution and abundance coincides with concentrations of right whales, will benefit from the imposition of DAM. There is no evidence that threatened or endangered species will be adversely affected by DAM. Similarly, there is no evidence that implementation of DAM is likely to result in a violation of a Federal, state or local law for environmental

protection. In fact, DAM would be expected to support Federal, state and local laws for environmental protection because it is expected that their goals and objectives would be similar to those of the MMPA and ESA. The implementation of DAM would not result in any actions that would be expected to result in the introduction or spread of a nonindigenous species.

In view of the analysis presented in this document, it is hereby determined that the implementation of DAM, as described in section 3.1 of this document, will not significantly affect the quality of the human environment with specific reference to the criteria contained in NAO 216-6 implementing the National Environmental Policy Act. Accordingly, the preparation of an Environmental Impact Statement for this proposed action is unnecessary.



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12/28/01
Date

8.0 REGULATORY IMPACT REVIEW (RIR)

8.1 Executive Order (E.O.) 12866

The RIR is intended to assist NMFS decision making by assessing all costs and benefits of available regulatory alternatives, including the alternative of not regulating, and by identifying regulatory alternatives that maximize net benefits to the nation.

Framework for Analysis

Net National benefit is measured through economic surpluses, consumer and producer surplus. The proposed action will provide for the protection of right whales by implementing area closures to the lobster and gillnet fisheries. Within this setting, consumer surplus is associated with the value of right whales and the consumer surplus associated with seafood products supplied by the lobster and gillnet fisheries. The value of right whale protection is comprised of non-consumptive use and non-use values. Non-consumptive use value is associated with activities such as whale watching while non-use value is associated with the satisfaction that people derive from knowing that right whales exist. Producer surplus is associated with the economic profit earned by businesses engaged in the lobster and gillnet fisheries as well as that earned by businesses providing transportation services to individuals that want to view right whales.

When comparing a regulatory action to the status quo or "no action" alternative, it is the change in net National benefit that becomes the focal point of analysis. Given the finding that the status quo alternative does not afford adequate protection, the consumer surplus (non-consumptive use and non-use value) associated with improved right whale protection will be superior to that of the status quo. Further, regulatory alternatives that afford higher protection will yield higher benefits at the margin.

Three of the four alternatives suggest a complete closure to gear, when a closure is triggered by a sighting of 1 to 8 right whales. A closure triggered by 3 right whales may be more protective than closures triggered by 4 right whales, but the marginal increase in protection may not outweigh the increased cost. The magnitude of protection provided by these regulatory alternatives can not be quantified, but they can be ranked. Based on 1999 and 2000 sightings data, sightings of 3 right whales indicate resident and typically feeding behavior (Clapham and Pace, 2000), a time when the entanglement rate is highest, while sightings of 1 right whale indicate transiting behavior. A closure triggered by 1 right whale sighting may not be protective since the right whale may leave the closure by the time the closure is implemented.

A closure triggered by 3 right whales (PA) is more protective than a closure triggered by 5 or 8 right whales (NPA 1). If a sighting of 1 right whale typically shows transiting behavior, a closure triggered by 1 right whale (NPA 2) would be less protective than a closure

triggered by 3 right whales. Finally, in the NPA 3 plan, a closure triggered by 3 right whales would require the lobster fleet to remove 50% of their buoy lines. The risk of entanglement would be reduced under the NPA 3, however, the chances of entanglement still exist. Therefore, the NPA 3 plan would be less protective than the PA plan, which is a complete closure to lobster and sink gillnet gear. In summary, a closure triggered by 3 right whales appears to provide the greatest protection. These conclusions are based on a retrospective analysis of right whale sightings data in 2000.

The absolute magnitude of protection provided by the regulatory alternatives is not known at this time and given the fact that entanglement is not the only source of mortality the likelihood that right whale stocks will recover even under the most extreme action is unknown. The PA plan considered for regulatory action is assumed to yield the highest right whale protection. Thus, consumer surplus for right whale protection may be greater for the PA plan in comparison to the alternatives. Similarly, the producer surplus associated with businesses providing whale watching services will be greater for the PA plan compared to the other regulatory alternatives and will be superior to that of the status quo.

Both consumer surplus and producer surplus for seafood products supplied by the lobster trap and gillnet fisheries will be affected by these right whale protection measures. These effects will manifest themselves through the proposed area closures. The proposed closures will decrease earned revenues which will result in a reduction in quantities supplied to seafood markets and higher prices to consumers. The magnitude of these changes and how the surpluses will be redistributed between consumers and producers will depend on the slopes of the respective supply and demand functions. In any case, as long as demand functions are downward sloping and supply functions are upward sloping, there is always a loss in economic surplus when regulatory costs are imposed. However, this loss in economic surplus will be minimized by selecting the least costly regulatory alternative which provides the maximum protection.

8.2 Regulatory costs to Lobster and Gillnet Fleet for DAM

The following five alternatives are evaluated: 1) Status Quo/No Action; 2) the preferred alternative (PA) plan, and 3) three additional non-preferred alternative (NPA) plans. The detailed economic analysis of these alternatives for the lobster and sink gillnet fleet are in Section 5. These alternatives are area closures to lobster and sink gillnet fishing, which are triggered by an observed sighting of 1 to 8 right whales.

The PA closure is triggered by a sighting of 3 right whales and based on work by Clapham and Pace (2000) and the NPA 1 closure is triggered by a sighting of 5 or 8 right whales which were suggestions from the ALWTRT. The NPA 3 plan, triggers a closure

by a sighting of 1 right whale. Finally, the NPA 3 closure is triggered by 3 right whales, however all sink gillnet gear must be removed and 50 percent of the buoy lines attached to lobster trawls must be removed. Based on right whale sightings data in 2000, the PA provides the most protection to right whales.

In 2000, there were six potential closures based on a sighting of 3 right whales and density of 0.04 right whales per square nautical mile according to Clapham and Pace (2000). A retrospective economic analysis of DAM Area 1, one of the six potential closures in 2000, was conducted. Specifically, a home port analysis indicated that 100% of the vessels fishing lobster gear in this area would not be able to fish in an alternative area. This finding was due to the observed distance vessels travel being less than the distance from their respective ports to outside the DAM Area 1 closure. In the case of sink gillnet vessel, 80 percent of these vessels were not capable of fishing in an alternative area due to the short distance they travel and other existing groundfish closures. However, in the sink gillnet fleet analysis presented here, a more conservative estimate is given by assuming 100 percent of the gillnet vessels can not fish in an alternative area.

The economic impacts of closing DAM Area 1 to lobster and sink gillnet fishing was examined in a previous analysis (Bisack), where DAM Area 1, was one of six potential closures in 2000 (Clapham and Pace, 2000). The home port analysis of closing DAM Area 1 to lobster and gillnet fishing (Bisack) is used here, to extrapolate the cost of closing other potential areas in 2000, as defined above in the PA, NPA 1, NPA 2 and NPA 3.

The total cost of the PA, NPA 1, NPA 2, and NPA 3 plan for the lobster and gillnet fleet is \$5.85M, \$0.03M, \$6.36M, and \$2.89M, respectively (Table 7). These costs include the cost of removing gear and forgone revenues due to not fishing. Details of this analysis can be found in Section 5.

Table 7 Total cost of the PA, NPA 1, NPA 2, and NPA 3 plan by fishery (in \$1000's).

	PA	NPA 1	NPA 2	NPA 3
Lobster	3,168	16	3,444	212
Gillnet	2,679	14	2,913	2,679
Total	5,847	30	6,357	2,891

8.3 Final Regulatory Flexibility Analysis

This action would amend the regulations implementing the ALWTRP to clarify NMFS' authority to temporarily restrict fishing gear within defined areas to protect concentrations of North Atlantic right whales, and to establish criteria and procedures for implementing such temporary restrictions north of 40°E N. latitude. The objective of this proposed action, issued pursuant to authority in § 118 of the MMPA, is to reduce the level of serious injury to and mortality of North Atlantic right whales in East Coast lobster trap and finfish gillnet fisheries. Since DAM will be used to respond to unusual and unexpected sightings of right whales, it is difficult for NMFS to predict exactly where DAM zones may be implemented in the future. Therefore, providing an accurate estimate of the number of small entities that will be affected is problematic. Based on the available data, a maximum of 7,539 state and federally permitted lobster vessels and 310 gillnet vessels, which includes federally permitted vessels and may include state permitted vessels, could be affected by the proposed action. However, NMFS does not expect that number of vessels to be affected by any one DAM closure because of the limited size of a DAM zone. For example, the retrospective analysis of the April-May 2000 DAM Area 1 estimated that 210 lobster vessels and 42 gillnet vessels would have been affected by the hypothetical closure. This action contains no reporting, recordkeeping, or other compliance requirements. There are no relevant Federal rule actions that duplicate, overlap, or conflict with the proposed action.

Five alternatives were evaluated in this EA, including a status quo or "no action" alternative, the preferred alternative, and three other alternatives. The existing regulations already state that the Assistant Administrator may revise the existing regulations through notice in the Federal Register in order to close areas, open areas, and change boundaries of a closed area or for a similar purpose (§ 229.32(g)(2)). It is difficult to quantify the economic impacts of NMFS using its discretion in implementing § 229.32(g)(2) as the trigger used, restricted zone and restrictions implemented are all unknown at this time in addition to the unknowns of the particular event such as the time and location of the restriction and the level of fishing effort at that time and location.

The No Action alternative would leave in place the existing regulations promulgated under the ALWTRP, but specific criteria and procedures would not be included in the regulations. The no action alternative would result in no additional economic burden on the fishing industry, at least in the short-term. However, if the status quo is maintained now, more restrictive and economically burdensome measures than those in this rule may be necessary in the future to protect endangered right whales from the fisheries. The no action alternative was rejected because it would not enable NMFS to meet the RPA measures of the BO required under the ESA.

The proposed action is to amend the regulations implementing the ALWTRP to clarify NMFS' authority to temporarily restrict fishing gear within defined areas on an expedited basis by establishing criteria and procedures to protect concentrations of North Atlantic right whales. NMFS accepted this alternative as these DAM zones are appropriate to avoid jeopardizing the continued existence of North Atlantic right whales and enable NMFS to meet a portion of the RPA in the BO's. The analysis showed 210 lobster vessels fishing in the hypothetical DAM Area 1 in April and May, 2000. The total industry cost associated with forgone revenues and removing the gear is \$1.3 million, assuming all lobster fishing ceased during the restricted period (Bisack, 2001). The cost per vessel is \$6,200 (\$1,600 + \$4,600) for removing gear and forgone revenues in DAM Area 1, which would reduce a vessel's annual revenue by 7% ($=\$6,200/\$89,600$).¹ The economic analysis of DAM Area 1 determined 42 gillnet vessels were fishing in DAM Area 1 between April 1 and May 31, 2000, according to the Vessel Trip Reporting (VTR) data. The total cost of closing six areas in 2000 under the PA plan is \$2.7M to the sink gillnet industry. The cost per vessel in DAM Area 1 is \$26,390 on average for removing gear and forgone revenues from not fishing, which would reduce a vessel's annual revenue by 20% ($=\$26,390/\$106,600$).

The third alternative considered having different triggers within each respective state jurisdiction as discussed by the ALWTRT. The State of Maine proposed the use of a trigger of 8 right whales in a 7.5 square nautical mile area on two consecutive observations that would result in a core area of 7.5 square nautical miles. The Commonwealth of Massachusetts proposed the use of a trigger of 5 right whales in a 15 square nautical mile area based on two sightings. The State of Rhode Island proposed the use of a trigger of 8 whales. Under Maine's proposal there would have been no closures based on sightings data from 2000. Under Massachusetts' proposal, there would have been one closure based on sightings data from 2000. The total cost of closing this one area in 2000 to the lobster fleet would have been \$16.3K. Total industry costs to the sink gillnet fleet for closing one area in 2000 would have been \$13.7K. None of the proposals offered by the states were supported by data. No information has been presented to demonstrate the potential for these triggers to result in DAM zones that would reduce the risk of entanglement to right whales. An alternative that does not achieve the mandates of the ESA and MMPA cannot be accepted.

The fourth alternative would trigger a DAM zone using the observation of one right whale on a single day. In addition, a buffer of 15 nm

¹ Results from DAM Area 1 were extrapolated to other DAM areas. This extrapolation approach results in an industry level estimate for the other 5 DAM areas. Using this method, individual vessel information is lost (ie. can't be transferred) and is not recoverable. Therefore, annual revenue reductions as a result of DAM closures are only presented for Area 1.

would be drawn around each individual animal observed. The trigger in this alternative is not effective at predicting residency, and thus not able to protect feeding right whales which are assumed to be at greater risk of entanglement. The economic analysis of 2000 sightings data indicates that 17 right whales would not be protected by the six closures under the PA plan. Total industry costs of the lobster fleet for the NPA 2 plan are \$3.5M. This includes \$0.3M for the 17 right whales not protected under the PA plan, plus \$3.2M for the PA plan. Total industry costs of the sink gillnet fleet for the NPA 2 plan are \$2.9M. This includes \$0.23M for the 17 right whales not protected under the PA plan, plus \$2.68M for the PA plan. The observation of one or two right whales does not appear to be a good indicator of residency, which is being used as an indicator of feeding.

Under the fifth alternative, the trigger and buffer would be the same as in the preferred alternative (i.e., the observation of 4 right whales in a 100 nm² area and the buffer would be 15 nm), however, instead of imposing a restriction requiring removal of all lobster gear, a 50 percent reduction in vertical lines would be required for lobster gear. The restrictions for gillnet gear would be the same as in the preferred alternative which requires complete removal. Based on right whale sightings data in 2000, six areas could potentially be closed (Clapham and Pace, 2000). Because this alternative would require the removal of only 50 percent of vertical lines for lobster gear rather than all vertical lines (i.e. all gear), NMFS is concerned that this alternative may not be consistent with statutory objectives. Total industry cost to remove 1 buoy line from six potential closures in 2000 is \$0.2M (Table 5). Area costs range from a high of \$49.7K in DAM Area 1 to \$24.3K in DAM Area 6. Based on the home port analysis of DAM Area 1, the average cost to remove one buoy line is \$237 per vessel. The total industry cost for sink gillnet vessels is the same as in the PA plan (see section 5.1.2).

NMFS has taken steps to minimize the significant economic impact on small entities through this PA. The PA meets a portion of the RPA designed to remove jeopardy, consistent with the requirements of the ESA, while allowing fishing to continue and, therefore, reduces economic impacts compared to fishery closures.

9.0 APPLICABLE LAW

9.1 National Environmental Policy Act

NMFS prepared this Environmental Assessment in accordance with the National Environmental Policy Act.

9.2 Endangered Species Act

A BO on the three Fishery Management Plans (FMP) for the monkfish, spiny dogfish, and multispecies fisheries, and the Federal regulations for the lobster fishery was issued on June 14, 2001. The BO concluded that the FMPS and lobster regulations jeopardize the continued

existence of right whales. Therefore, NMFS defined a Reasonable and Prudent Alternative (RPA) with multiple management components to the proposed action. Among the RPA elements was a mechanism for the expedited closure of areas outside designated right whale critical habitat, which NMFS has termed Dynamic Area Management (DAM). The proposed action is intended to implement the DAM element of the RPA

9.3 Marine Mammal Protection Act

The proposed action to establish criteria and procedures for implementing DAM will not adversely affect marine mammals because the proposed criteria and procedures would provide a consistent means for implementing DAM, the purpose of which is to reduce the risk of entanglement of right whales in lobster trap gear and gillnet fishing gear.

9.4 Paperwork Reduction Act

This proposed action does not contain a collection-of-information requirement for the purposes of the Paperwork Reduction Act.

9.5 Essential Fish Habitat

The area affected by the proposed action has been identified as EFH for species in the Northeast groundfish, sea scallops, monkfish, and spiny dogfish FMPs. This proposed action may have an adverse impact on EFH. Because the potential adverse impact on EFH is not substantial, NMFS conducted an abbreviated EFH consultation pursuant to 50 CFR 600.920(h) and prepared an EFH Assessment on September 6, 2001, that incorporates all of the information required in 50 CFR 920(g)(2). No EFH consultation recommendations resulted from that consultation process.

10.0 REFERENCES

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1. See Figure (7) in Clapham and Pace (2000) for area definitions.